

List of Current Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1 - 17 (Cancelled).

18. (New) A potentiometric sensor connectable to a superordinated unit, comprising:

- an elementary sensor for registering a potentiometric parameter;
- an interface for issuing a potentiometric-parameter-dependent signal to the superordinated unit; and
- a digital data memory, permanently connected with said elementary sensor.

19. (New) The potentiometric sensor as claimed in claim 18, further comprising:
an analog-digital-converter for converting an analog signal issued from said elementary sensor into a digital signal.

20. (New) The potentiometric sensor as claimed in claim 18, wherein:
said elementary sensor stores one or more of the following items of information:
the calibration data of said elementary sensor; the sensitivity of said elementary sensor determined at a first temperature, especially 25°C; the asymmetry potential determined at 25°C; the temperature offset; logistical information; the serial number of said elementary sensor; the temperature range of application; the pH range of application; the extreme values of the operating temperature; the extreme values of the operating pH; the identification of a technician; the service life; the isothermal point of intersection; the Sensor Check System status; at least one pH measured value; and at least one redox measured value, one or more temperature measured values.

21. (New) The potentiometric sensor as claimed in claim 20, wherein:
said data memory stores historical data over a moving time-interval of sensor operation.

22. (New) The potentiometric sensor as claimed in Claim 20, wherein:
said data memory stores event-dependent historical data.

23. (New) The potentiometric sensor as claimed in claim 18, further comprising:
a microprocessor for control of said digital data memory and/or control of said interface for communication with the superordinated unit.

24. (New) The potentiometric sensor as claimed in claim 18, wherein:
said digital data memory is connected such that it can be controlled via said interface from the superordinated unit.

25. (New) The potentiometric sensor as claimed in claim 18, wherein:
the superordinated unit has a housing, and
the potentiometric sensor is detachably connected with the housing of the superordinated unit via a mechanical coupling, which includes said interface.

26. (New) The potentiometric sensor as claimed in claim 18, wherein:
the superordinated unit has a cable, and
the potentiometric sensor is detachably connected with the cable which communicates with the superordinated unit by means of a coupling which includes said interface.

27. (New) The potentiometric sensor as claimed in claim 18, wherein:
said interface, in addition to data communication, also ensures the power supply of the potentiometric sensor.

28. (New) The potentiometric sensor as claimed in claim 18, wherein:
said interface is a non-galvanic interface.

29. (New) The potentiometric sensor as claimed in claim 18, wherein:
said interface is an inductive interface.

30. (New) The potentiometric sensor as claimed in claim 18, wherein:
said interface is a galvanic interface.

31. (New) The potentiometric sensor as claimed in claim 18, further
comprising:
a temperature sensor.

32. (New) The potentiometric sensor as claimed in claim 18, wherein:
the potentiometric sensor is a pH-sensor, and said elementary sensor comprises
a pH-electrode.

33. (New) The potentiometric sensor as claimed in claim 18, wherein:
the potentiometric sensor is a redox-sensor, and
said elementary sensor comprises a redox-electrode.

34. (New) The potentiometric transmitter for issuing at least one measurement
signal representing a potentiometric parameter, having:
an interface for operation and for data exchange with a potentiometric sensor,
said potentiometric sensor including:
an elementary sensor for registering a potentiometric parameter; an interface for
issuing a potentiometric-parameter-dependent signal to a superordinated unit; and a
digital data memory permanently connected with said elementary sensor.